

Remarks

The Office Action mailed March 9, 2006 has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 1-32 are now pending in this application. Claims 1-21 are allowed. Claims 22, 23, and 29-32 are rejected. Claims 24-27 are objected to. Claims 9, 19, 22, and 30 have been amended. No new matter has been added.

In accordance with 37 C.F.R. 1.136(a), a one-month extension of time is submitted herewith to extend the due date of the response to the Office Action dated March 9, 2006 for the above-identified patent application from June 9, 2006 through and including July 10, 2006. June 9, 2006 is a Sunday. In accordance with 37 C.F.R. 1.17(a)(1), authorization to charge a deposit account in the amount of \$120.00 to cover this extension of time request also is submitted herewith.

Applicants respectfully traverse the statement that the reissue oath/declaration is defective. Applicants submit herewith a supplemental reissue declaration.

The rejection of Claims 9-11, 19-21, and 30-32 under 35 U.S.C §112, first paragraph, is respectfully traversed. Applicants have amended Claims 9, 19, and 30. Moreover, Claims 10-11 depend, directly or indirectly, from independent Claim 9, Claims 20-21 depend, directly or indirectly, from independent Claim 19, and Claims 31-32 depend, directly or indirectly, from independent Claim 30. Applicants respectfully submit that the specification, including the figures, would enable one skilled in the art to make and/or use the invention as described in the present patent application. Accordingly, Applicant respectfully requests that the rejection of Claims 9-11, 19-21, and 30-32 under Section 112, first paragraph, be withdrawn.

For at least the reasons set forth above, Applicants respectfully request that the rejection of Claims 9-11, 19-21, and 30-32 under Section 112, first paragraph, be withdrawn.

The rejection of Claims 9-11, 19-21, and 30-32 under 35 U.S.C §112, second paragraph, is respectfully traversed. Applicants have amended Claims 9, 19, and 30. Moreover, Claims 10-11 depend, directly or indirectly, from independent Claim 9,

Claims 20-21 depend, directly or indirectly, from independent Claim 19, and Claims 31-32 depend, directly or indirectly, from independent Claim 30. Applicants respectfully submit that Claims 9-11, 19-21, and 30-32 particularly point out and distinctly claim the subject matter which the Applicants regard as their invention. Accordingly, Applicants respectfully request that the section 112 rejection to Claims 9-11, 19-21, and 30-32 be withdrawn.

The rejection of Claims 22 and 29 under 35 U.S.C. § 102(b) as being anticipated by Meno (U.S. Patent No. 4,716,904) is respectfully traversed.

Meno describes a ventriculography procedure. During the procedure, based on pulsed fluoroscopy, any two successive digitized video images are subtracted in real time (column 4, lines 52-54). These "difference images" or $I_n - I_{n-1}$ contain only those aspects of the image that have changed, that is, registering only an amount of contraction and motion (column 4, lines 54-57). If the time between successive images is relatively short, 1/30 of a second for example, then the motion due to respiration is negligible and does not contribute significantly to error (column 4, lines 57-60).

Claim 22 recites a method for facilitating calcification scoring, the method comprising "imaging a heart at a first phase of a cardiac cycle to obtain a first image; imaging the heart at a second phase of the cardiac cycle to obtain a second image, wherein the second phase is different from the first phase; and determining a difference image using the first and second images."

Meno does not describe or suggest a method for facilitating calcification scoring as recited in Claim 22. Specifically, Meno does not describe or suggest imaging the heart at a second phase of the cardiac cycle to obtain a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. Rather, Meno describes generating a difference image or $I_n - I_{n-1}$ that contains only those aspects that have changed, that is, registering only an amount of contraction and motion. A time between the successive images is relatively short, such as 1/30 of a second. A description of generating the difference image, where a time between the successive images is relatively short does not teach imaging the heart at a second phase of the cardiac cycle to obtain a second

image, where the second phase is different from the first phase. Accordingly, Meno does not describe or suggest imaging the heart at a second phase of the cardiac cycle to obtain a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. For the reasons set forth above, Claim 22 is submitted to be patentable over Meno.

Claim 29 depends from independent Claim 22. When the recitations of Claim 29 are considered in combination with the recitations of Claim 22, Applicants submit that dependent Claim 29 likewise is patentable over Meno.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 22 and 29 be withdrawn.

The rejection of Claims 22 and 29 under 35 U.S.C. § 102(b) as being anticipated by Haendle et al. (U.S. Patent No. 4,433,428) is respectfully traversed.

Haendle et al. describes a diagnostic x-ray installation method. In the method, where there are n pixels in an image, a digital image stored by an image memory (7) during an image interval following a R-wave signal from a control (17), may be represented as R_n (column 3, line 38 – column 4, line 1). At a time of a supply of a delayed T-wave signal from the control, a digital video signal is supplied by a converter (6), which may be represented as T_n (column 4, lines 1-4). The stored image R_n may be supplied from the image memory pixel by pixel to a subtractor (8) during each video image cycle, for example, so that at the occurrence of the T-wave signal from the control, a difference signal will be supplied from the subtractor and stored in the image memory (column 4, lines 4-12). The method includes triggering an image storage operation at selected different times of a heart cycle (column 1, lines 40-46). Two x-ray images pertaining to different heart phases are thereby retained in a memory so that one can recognize a movement of an organ from a subtraction image (column 1, lines 46-50).

Claim 22 is recited above.

Haendle et al. does not describe or suggest a method for facilitating calcification scoring as recited in Claim 22. Specifically, Haendle et al. does not describe or suggest imaging the heart at a second phase of the cardiac cycle to obtain

a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. Rather, Haendle et al. describe a method including generating n pixels in an image. Where the n pixels are in the image, a digital image stored by an image memory during an image interval following a R-wave signal from a control, may be represented as R_n . At a time of a supply of a delayed T-wave signal from the control, a digital video signal is supplied by a converter, which may be represented as T_n . The stored image R_n may be supplied from the image memory pixel by pixel to a subtractor during each video image cycle, for example, so that at the occurrence of the T-wave signal from the control, a difference signal will be supplied from the subtractor and stored in the image memory. The method further includes triggering an image storage operation at selected different times of a heart cycle. Two x-ray images pertaining to different heart phases are thereby retained in a memory so that one can recognize a movement of an organ from a subtraction image. A description of supplying the difference signal from the subtractor, triggering an image storage operation at selected different times of a heart cycle, and retaining two x-ray images pertaining to different heart phases in a memory to recognize a movement of an organ from a subtraction image does not teach imaging the heart at a second phase of the cardiac cycle to obtain a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. Accordingly, Haendle et al. does not describe or suggest imaging the heart at a second phase of the cardiac cycle to obtain a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. For the reasons set forth above, Claim 22 is submitted to be patentable over Haendle et al.

Claim 29 depends from independent Claim 22. When the recitations of Claim 29 are considered in combination with the recitations of Claim 22, Applicants submit that dependent Claim 29 likewise is patentable over Haendle et al.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 22 and 29 be withdrawn.

The rejection of Claims 23 and 28 under 35 U.S.C. § 103(a) as being unpatentable over Haendle et al. is respectfully traversed.

Haendle et al. is described above.

Claims 23 and 28 depend from independent Claim 22, which is recited above.

Haendle et al. does not describe or suggest a method for facilitating calcification scoring as recited in Claim 22. Specifically, Haendle et al. does not describe or suggest imaging the heart at a second phase of the cardiac cycle to obtain a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. Rather, Haendle et al. describe a method including generating n pixels in an image. Where the n pixels are in the image, a digital image stored by an image memory during an image interval following a R-wave signal from a control, may be represented as R_n . At a time of a supply of a delayed T-wave signal from the control, a digital video signal is supplied by a converter, which may be represented as T_n . The stored image R_n may be supplied from the image memory pixel by pixel to a subtractor during each video image cycle, for example, so that at the occurrence of the T-wave signal from the control, a difference signal will be supplied from the subtractor and stored in the image memory. The method further includes triggering an image storage operation at selected different times of a heart cycle. Two x-ray images pertaining to different heart phases are thereby retained in a memory so that one can recognize a movement of an organ from a subtraction image. A description of supplying the difference signal from the subtractor, triggering an image storage operation at selected different times of a heart cycle, and retaining two x-ray images pertaining to different heart phases in a memory to recognize a movement of an organ from a subtraction image does not teach imaging the heart at a second phase of the cardiac cycle to obtain a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. Accordingly, Haendle et al. does not describe or suggest imaging the heart at a second phase of the cardiac cycle to obtain a second image, where the second phase is different from the first phase, and determining a difference image using the first and second images. For the reasons set forth above, Claim 22 is submitted to be patentable over Haendle et al.

When the recitations of Claims 23 and 28 are considered in combination with the recitations of Claim 22, Applicants submit that dependent Claims 23 and 28 likewise are patentable over Haendle et al.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 23 and 28 be withdrawn.

In addition to the arguments set forth above, Applicants respectfully submit that the Section 103 rejection of Claims 23 and 28 as being unpatentable over Haendle et al. is not a proper rejection. As is well established, the mere assertion that it would have been obvious to one of ordinary skill in the art to have modified Winn et al. to obtain the claimed recitations of the present invention does not support a prima facie obvious rejection. Rather, each allegation of what would have been an obvious matter of design choice must always be supported by citation to some reference work recognized as standard in the pertinent art and the Applicants given the opportunity to challenge the correctness of the assertion or the notoriety or repute of the cited reference. Applicants has not been provided with the citation to any reference supporting the combination made in the rejection. The rejection, therefore, fails to provide the Applicants with a fair opportunity to respond to the rejection, and fails to provide the Applicants with the opportunity to challenge the correctness of the rejection. Of course, such combinations are impermissible, and for this reason, Applicants request that the Section 103 rejection of Claims 23 and 28 be withdrawn.

For at least the reasons set forth above, Applicants respectfully request that the rejections of Claims 23 and 28 under 35 U.S.C. 103(a) be withdrawn.

Applicants respectfully disagree with a first statement of reasons for allowance on page 7 of the Office Action. The first statement states, “The prior art of record neither teaches nor reasonably suggests a CT imaging...where a difference image is determined from two scout scans of a heart taken at two different phases, as required by the combination as claimed in each of claims 1 and 12.” Applicants respectfully submits that Claims 1 and 12 do not include, “two scout scans of a heart”, as stated in the first statement. Rather, Claim 1 includes, “acquiring data representative of a first scout-scanned CT image of physical locations of the patient’s body including at least a portion of the patient’s heart at phases $\phi_1(L)$ of the cardiac cycle; acquiring data representative of a second scout-scanned CT image of the physical locations of the patient’s body including at least a portion of the patient’s heart at phases $\phi_2(L)$ of the cardiac cycle different from $\phi_1(L)$; and determining a difference image from the

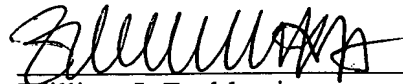
acquired data representative of the first scout-scanned CT image and the acquired data representative of the second scout-scanned CT image data”. Moreover, Claim 12 includes, “acquire data representative of a first scout-scanned CT image of physical locations of the patient’s body including at least a portion of the patient’s heart at phases $\phi_1(L)$ of the cardiac cycle; acquire data representative of a second scout-scanned CT image of the physical locations of the patient’s body including at least a portion of the patient’s heart at phases $\phi_2(L)$ of the cardiac cycle different from $\phi_1(L)$; and determine a difference image from the acquired data representative of the first scout-scanned CT image and the acquired data representative of the second scout-scanned CT image data.”

Claims 24-27 are indicated as allowable. Applicants thank the Examiner for the indication of allowable subject matter.

Applicant respectfully disagrees with a second statement of reasons for allowance on page 8 of the Office Action. The second statement states, “The prior art of record neither teaches nor reasonably suggests the additional method step of taking the first and second images using different rows of the detector in one pass of the patient table, as required by the combination as claimed in claim 30.” Applicant respectfully submits that Claim 30 does not include, “in one pass of the patient table”, as stated in the second statement. Rather, Claim 30 includes, “A method in accordance with Claim 22 wherein imaging a heart to obtain a first image and imaging a heart to obtain a second image are performed by utilizing different detector rows of an imaging system”.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'William J. Zychlewicz', written over a horizontal line.

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